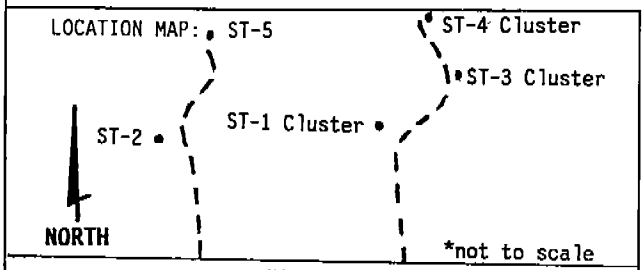
LITHOLOGIC LOG



SW 1/4 SE 1/4 NE 1/4 NW 1/4 S32 T20S R3E

SITE ID: NASA-WSTF LOCATION ID: ST-4-481

SITE COORDINATES (ft.):

N 232154.39 E 400492.51

GROUND ELEVATION (ft. MSL): 4493.16' (BC)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary/Air Foam Rotary

DRILLING CONTR.: Larjon Drilling Co

DATE STARTED: 04/08/92 DATE COMPLETED: 04/23/92

FIELD REP.: M. Canavan, D. Menzie

COMMENTS: Drill mud rotary 0'-85' (12¼ tricone milltooth). Ream to 16". Install 85' of 10" surface casing. Drill air/foam rotary 85'-510' with 9 7/8" mill tooth bit. Total Depth = 510'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5			Timed by driller 0'-85'	Cuttings every 5' 0'-510'	0'-510' Alluvium (Santa Fe Group): Unwashed samples range in color from moderate brown (5 YR 3/4) to light gray (N8). Washed samples are dark gray to multi-colored. Cuttings range in size from 1.0 inch to much less than 0.1 inches (clay and silt size). Average cutting size is 0.25 inches. Cuttings are subrounded to angular. Subrounded cuttings are formational grains and comprise 20% - 60% of samples. Subangular and angular cuttings include blocky formation clasts and chips broken during drilling. The Alluvium is an unconsolidated to consolidated, poorly sorted, pebble to boulder polygenetic conglomerate. Intermittent clay and caliche intervals are noted on log. Alluvial clasts consist of dark gray (N3) to light olive gray (5 Y 5/2) micritic limestone, white (N9) iron-stained rhyolite, brownish black (5 YR 2/1) sandstone, moderate reddish brown (10 R 4/6) siltstone, light brownish gray (5 YR 6/1) andesite, white (N9) to light gray (N7) quartz, and light gray (N7) caliche. Minor amounts of tuff, granite, and quartzite occur. Andesite increases in abundance with depth until alluvium becomes volcanic-rich (≥ 50% of sample) at 440'.
10			15		
15			21		
20			16		
25			16		
30			29		
35			21		
40			26		
45			14		
50			19		
			24		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval		Lithologic Description
				Cuttings (cont'd)		
50			24			
55			29			
60			16		60'-65'	Cuttings average .5" in diameter and are subangular to angular.
65			15		65'-70'	Cuttings range from .10"-1.0" in diameter and are angular to subrounded. 80% of cuttings are natural gravels of .5" or greater.
70			23		70'-80'	Gummy pale brown clay.
75			14			
80			19		80'-85'	Cuttings are angular to subangular and average .25" in diameter.
85			17 Recorded by drillograph 85'-310'		85'	Start air/foam rotary.
90			6		90'-100'	Cuttings are subangular to rounded and range from .10" to .5".
95			4			
100			6		100'-105'	Cuttings are predominantly subrounded to rounded. Larger (.5"-.75") cuttings are limestone.
105			6			
110			8		110'	Average cutting size is getting smaller.
115			4			

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
115			4		
120			5		
125			5		
130			7		130' Average cutting size is .25".
135			7		
140			4		
145			4		145'-155' "0" symbol represents cemented alluvium (rounded clasts). Cuttings are fairly uniform .10"-.25" and are rounded to subangular.
150			5		
155			4		155' Cuttings average .25" and are subangular to rounded. Mudstone, quartz and sandstone are also present in lesser percentages.
160			14		
165			5		
170			4		
175			4		
180			4		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
180			4		
185			6		185'-260' "0" symbol represents cemented alluvium. Clasts of which are very well rounded. Sandstones and mudstones also prevalent. Cuttings are fairly uniform in size .10"-.25".
190			3		
195			4		
200			5		
205			5		
210			8		
215			2		
220			3		
225			6		
230			4		
235			4		
240			3		
245			3		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
245			3		
250			4		
255			5		
260			6		260'-305' Very fine-grained (.05") fraction comprises 20%-60% sample. Remainder of cuttings range from .10"-.5".
265			5		
270			5		
275			7		
280			3		
285			4		
290			5		
295			7		
300			6		
305			7		305' Cuttings are subangular to rounded.
310			8		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
310			8		310' Cuttings average .25".
315			4		
320			8		
325			6		
330			6		
335			5		335'-345' 5%-8% cemented alluvium cuttings present.
340			5		
345			7		
350			7		
355			7		
360			19		
365			6		
370			7		
375			14		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
375			14		375'-385' Some nice greenish gray andesite cuttings.
380			6		
385			7		
390			6		
395			6		
400			8		
405			7		
410			9		
415			6		
420			6		
425			5		
430			6		
435			5		435'-440' Cuttings are subrounded to rounded and range from .1"-.25".
440			4		440'-510' Volcanic-Rich Alluvium.

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
440			4		
445			4		445'-510' Andesite increasing in percent of volcanics.
450			6		
455			6		
460			9		
465			3		
470			3		
475			5		
480			4		
485			3		
490			3		
495			5		
500			4		
505			3		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
505			3		
510			3		TD = 510'
515					
520					
525					
530					
535					
540					
545					
550					
555					
560					
565					
570					